

IV. Surface Water Monitoring and Assessment Information: How Clean is My Stream or Lake?

How are assessments organized?

Arizona's 2004 assessments are presented by watershed in this chapter. For each watershed, the following information is provided:

- < A watershed map illustrating monitoring sites and final assessments,
- < Surface water quality monitoring tables, and
- < Assessment tables.

Surface Water Monitoring Tables – The information in the surface water monitoring tables may be the most valuable information in this report. The monitoring tables summarize the water quality data used and provide the final assessment of individual surface waters. The agency or organization doing the monitoring, number of samples, years sampled, and constituents exceeding standards are summarized in these tables. These tables are the basis for 303(d) listing and/or delisting decisions. The information contained within is also used by many federal and state programs that permit activities that may add further discharges to these surface waters. These tables provide the most comprehensive list of monitoring activities in Arizona.

The tables are organized by site (sampling location), indicating what, if any, exceedances were found. The shaded summary rows combine all of the monitoring data from all of the sites in a particular stream reach or lake, and indicate the assessment for each designated use.

Assessment Tables - These are comprehensive tables, bridging current assessments with past assessments and impaired waters identification. The Assessment tables provide the following information:

- Assessments for each designated use: “attaining,” “inconclusive,” “not attaining,” or “impaired” (see criteria in Chapter III);
- Which surface waters will be on the 2004 303(d) List submitted to EPA and the pollutants of concern;
- Which surface waters will be added to the Planning List and the pollutants of concern or reason for this action;
- Which pollutants and surface waters should be removed from the 2002 303(d) List and the reasons for this action; and
- Which TMDLs are ongoing or completed.

As requested in EPA's *Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act*, ADEQ's assessment tables place waters into one of the following five categories:

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| Category 1 | All designated uses are met; |
| Category 2 | Some of the designated uses are attaining but insufficient data to determine if remaining designated uses are attaining or impaired (also includes threatened waters); |
| Category 3 | Insufficient data to determine whether any designated uses are attaining their uses; |
| Category 4 | Water is impaired but a TMDL is not needed; |
| Category 5 | Water is impaired and a TMDL is needed (on the 2004 303(d) List). |

Chapter V takes these waters assessed and lists them by these categories. Those waters on the 303(d) List are then prioritized later for TMDL development.

How is a surface water added or removed from the 303(d) List?

Listing and Delisting Criteria - The criteria for listing or delisting a surface water are established in the *Impaired Water Identification* rule (**Appendix B**). In general, the same amount and type of data used to place a surface water on the 303(d) List is needed to remove it from the list. For example, if two bacterial exceedances in a 3-year period put it on the list, then no exceedances in a 3-year period could remove it from the list. However, the data must be collected during similar hydrologic or climatic conditions (i.e., critical conditions) that occurred when samples were taken that indicated impairment, if those conditions still exist. All data must meet the credible data requirements.

When a water is assessed as “impaired,” it is added to the 303(d) List. As noted in Chapter III, a designated use is impaired if any of the following occur:

- At least 20 samples were collected during three (3) or more sampling events and the minimum number of samples exceeded a standard (minimum exceedances based on number of samples collected is established in the *Impaired Water Identification* rule, Table 2 (Appendix B). This table starts with a minimum of five (5) exceedances among 20 samples.

- An acutely toxic pollutant exceeded its surface water quality standard more than once in a three-year period. Acutely toxic pollutants include:
 1. Those pollutants with Aquatic and wildlife acute toxic standards,
 2. Nitrate or nitrate/nitrite standards,
 3. Single sample maximum standards for bacteria.
- More than one exceedance of the following statistically-based criteria in surface water standards:
 1. An annual mean or 90th percentile for nutrients,
 2. 30-day geometric mean for bacteria,
 3. Aquatic and wildlife chronic criteria.

The criteria for removing a surface water from the 303(d) List can be summarized as follows:

- There is sufficient credible data to determine that the surface water is assessed as “attaining” its designated uses based on numeric and/or narrative criteria for the pollutant of concern (see criteria in Chapter III);
- A TMDL has been completed;
- An EPA approved change in the applicable surface water quality standard or designated use results in the surface water meeting standards;
- Neither the older data nor the current data is sufficient to meet the new impaired waters identification criteria. For example, there was an insufficient number of samples, sampling events, or exceedances.
- Investigations reveal that impairment is not due to a pollutant or surface water quality characteristic but rather due to “pollution” or other situation that cannot be readily addressed through a TMDL (e.g., hydrologic modifications).
- Investigations reveal that pollutant loadings from naturally occurring conditions alone are sufficient to cause a violation of applicable water quality standards.
- Reach is split and no current or historic data exist in one portion of the list that would support a listing.

When removed from the 303(d) List, a surface water is added to the Planning List for further monitoring or other action unless all designated uses are assessed as “attaining.”

EPA Additions to the 303(d) List – Some of the surface waters in the following tables have a special notation indicating that a listing was made by EPA in 2002. EPA is not bound by Arizona’s *Impaired Water Identification* rule

nor Arizona’s TMDL Statute (Appendix B), and has the authority to revise the 303(d) listings submitted by Arizona. In 2002, EPA added 19 additional surface waters to the 303(d) List and added 3 additional pollutants to surface waters already listed. EPA identified the following three situations where waters should have been listed according to federal guidelines, but were not on the Section 303(d) List submitted by Arizona:

- A fish consumption advisory has been issued based on pollutant concentrations in fish tissues collected in Arizona. EPA finds this to be evidence of narrative standards violations.
- Although a fish consumption advisory has not yet been issued, fish tissue data indicate that mercury or other bioaccumulative pollutant levels are much higher than EPA’s screening guidelines designed to protect against adverse impacts to human health. This is also evidence of narrative standards violations.
- Available data indicate that several waters “substantially” exceed the state’s water quality standards for specific pollutants. EPA concluded that the state’s decision to not list waters with fewer than 20 samples was inconsistent with federal listing requirements if there were sufficient exceedances to support a reliable conclusion that standards are not being attained. For example, since five exceedances are sufficient for listing with 20 samples under Arizona’s rules, five exceedances should be sufficient with fewer than 20 samples.

Based on discussions with EPA’s Region IX staff, ADEQ anticipates that EPA will use the same criteria to revise the 2004 list being submitted as part of this report. As indicated in Chapter III, EPA may also add some waters to the 2004 303(d) List based on suspended sediment concentration and turbidity data. In the following assessment tables, a notation has been added to indicate which waters EPA may add to the 2004 303(d) List. However, EPA will provide a another public comment period

Note that all waters placed on the 2002 303(d) List by EPA remained on the list and are indicated as “impaired.” These waters will be delisted when they meet requirements established in Arizona’s *Impaired Water Identification* rule for delisting (e.g., TMDL complete, changes in standards, sufficient new data indicate that designated uses are being attained).

ADEQ is currently working on narrative implementation procedures that will provide the basis for Arizona to make a 303(d) listing due to narrative water quality standards violations. Arizona anticipates changes to the *Impaired Water Identification* rule and/or the surface water quality standards through the rulemaking process, when these procedures have received adequate public review.

How is a surface water added to or removed from the Planning List?

Planning List delisting criteria -- Criteria for removing a surface water or pollutant from the Planning List is also established in the *Impaired Water Identification* rule (R18-11-605.E). A surface water is removed from the Planning List based on the following criteria:

- The surface water is assessed as impaired and added to the 303(d) List; or
- There are sufficient data to determine that the surface water is “attaining” all of its designated uses.

Relating the Planning List and 303(d) List -- A surface water may be on both the Planning and 303(d) Lists due to different parameters of concern. As stated above, when a surface water is removed from the 303(d) List, it is either added to the Planning List or all designated uses are assessed as “attaining.” A surface water is removed from the Planning List when all designated uses are assessed as either “attaining” or “impaired.” The only way to be removed from both lists is to be assessed as “attaining” all designated uses.

Overview of Assessment Terms and Criteria

Criteria for assessing designated uses and surface waters are provided in Chapter III, along with definitions for designated uses and the “core parametric coverage.” These definitions and criteria are complex, so information in Chapter III should be reviewed before looking at tables in this chapter. However, to facilitate review of the assessment tables, summary definitions of some assessment terms are provided on the next page.

Assessing Each Designated Use	Combined Assessment of Uses	Designated Uses	Core Parametric Coverage
<p>Each designated use is assessed as follows:</p> <p>Attaining – All surface water quality standards are being met based on a minimum of 3 monitoring events that provide seasonal representation and core parametric coverage. A subset of “attaining” are the Threatened waters where a surface water quality standard is currently being met, but a trend analysis indicates that the surface water is likely to be impaired before the next assessment.</p> <p>Impaired – A surface water quality standard is not being met based on criteria identified in the Impaired Waters Identification Rule (Appendix B).</p> <p>Not Attaining – A designated use would be assessed as “impaired” except that a TMDL does not need to be completed for one of the following reasons:</p> <p>A. A TMDL has already been completed and approved by EPA but the surface water is not yet attaining uses. (Note that Arizona has created this subcategory for the 2004 assessment.)</p> <p>B. Other pollution control requirements are reasonably expected to result in the attainment of water quality standards by the next regularly scheduled listing cycle.</p> <p>C. The impairment is not related to a “pollutant” loading, but is caused by “pollution” (e.g. hydrologic modification).</p> <p>D. The surface water would be impaired under the former turbidity standard (repealed in 2002).</p> <p>Inconclusive – Monitoring or other assessment information available is insufficient to assess the surface water as “attaining,” “threatened,” “impaired,” or “not attaining.”</p>	<p>The individual designated use assessments are combined to provide an assessment of the surface water and each surface water is placed on one part of the 5-part assessment list as follows:</p> <p>Attaining – A) All designated uses are assessed as “attaining” (Category 1), or B) At least one designated use is assessed as “attaining” and others are assessed as “inconclusive” or “threatened” (Category 2).</p> <p>Inconclusive – All designated uses are assessed as “inconclusive” (Category 3).</p> <p>Not Attaining – One or more designated use is assessed as “not attaining” and none are assessed as “impaired” (Category 4).</p> <p>Impaired – One or more designated is assessed as “impaired” (Category 5).</p> <p>Not Assessed – Existing data is limited to one or two samples or data did not meet credible data requirements established in the <i>Impaired Water Identification</i> rule. In these cases, the data is summarized in the monitoring tables; however, an assessment is not attempted. The surface water is added to the Planning List. If standards were exceeded, the surface water and the parameters of concern are shown on the assessment tables (Category 3).</p>	<p>Designated uses are specified for stream segments and lakes in the surface water rules (A.A.C. R18-11-104 and 105). Arizona’s surface water designated uses include:</p> <p>Aquatic and Wildlife Coldwater Fishery (A&Wc) Warmwater Fishery (A&Ww) Ephemeral Stream (A&We) Effluent Dependent Water (A&Wedw) Full Body Contact (FBC) (i.e., swimming) Partial Body Contact (PBC) (i.e., non-swimming recreation) Fish Consumption (FC) Domestic Water Source (DWS) Agricultural Irrigation (Agl) and Agricultural Livestock Watering (AgL)</p>	<p>Required to Assess a Designated Use as “Attaining” Uses:</p> <p>Aquatic and Wildlife -- Dissolved oxygen, flow (if a stream) and depth (if a lake), hardness, pH, turbidity/SSC, total nitrogen and total phosphorus, dissolved metals (cadmium, copper, and zinc).</p> <p>Fish Consumption -- Total mercury</p> <p>Full Body or Partial Body Contact – <i>Escherichia coli</i>, pH</p> <p>Domestic Water Source -- Nitrate/nitrite or nitrate, pH, total fluoride, total metals (arsenic, chromium or chromium VI, and lead)</p> <p>Agriculture Irrigation -- Total boron, total manganese, pH</p> <p>Agriculture Livestock Watering -- Total metals (copper and lead), pH</p> <p>Notes:</p> <p>*Nitrogen and phosphorus are required only in surface waters with nutrient standards.</p> <p>*In ephemeral waters, the following parameters are not required, dissolved oxygen, turbidity/SSC and <i>Escherichia coli</i>.</p> <p>*In effluent dependent waters and all lakes, SSC is not required.</p>